REMARKS

With the present Amendment, claims 1 and 21 have been amended as indicated above.

In the Office Action, claims 1, 3-9, 21-22, and 24-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sayre (U.S. Patent Number 5,175,808) in view of Browne (U.S. Patent Number 6,542,157).

Sayre discloses a system for performing non-affine transforms on a pixel-by-pixel basis. Due to the complexity of performing non-affine transforms, Sayre divides the transforms into an x component and a y component. It then generates two displacement tables X and Y. The X displacement table indicates how each pixel in the source image should be displaced in the x direction based on the non-affine transform. The Y displacement table indicates how each pixel in the source image should be displaced in the y direction based on the non-affine transform. Each pixel in the source image is then applied to the X displacement table to produce a temporary table that includes pixel values that represent the displacement of the pixels along the x direction. The Y displacement table is then applied to the X displacement table to provide a modified Y displacement table. The pixels in the temporary table are then applied to the modified Y displacement table to form a destination table of pixels. Note that each transformation is done on a pixel-by-pixel basis. The resulting destination table is ready for rendering simply by using the pixel values in the table.

Browne discloses a system for filling displayed objects with Celtic knot designs. Because of the repetitive nature of the Celtic knot design, each design can be represented by a set of square and triangular tiles, where each tile includes a set of curves that form part of the knot design. Within the object borders, a mesh of quadrilaterals and triangles is identified such that the quadrilaterals have desirable length and proportion

properties. For each quadrilateral and triangle in the mesh, the system determines which edges in the quadrilateral and triangle should have curves entering and exiting from them. A tile from the tile set is then selected for each quadrilateral and triangle in the mesh based on the number of edges that have curves exiting or entering from them. The curves from the matched tiles are then mapped to the mesh elements by mapping "Only the control points that describe the curves..." (See Browne, column 10, lines 45-49). The mapping of the control points can include a standard non-affine bilinear warp of the control points. However, since Browne only applies transforms to the control points, it does not apply a transform to a function including a variable.

Claims 1 and 3-9

Independent claim 1 of the present application is directed to a method of displaying an image on a screen by describing at least a portion of a base image as a path, where the path represents multiple pixels and comprises a function of at least one variable. A non-affine transform is performed on the path instead of the multiple pixels represented by the path to produce a transformed path by performing the non-affine transform on the function including the variable. The transformed path is then rendered onto a computer screen.

Neither Browne nor Sayre show or suggest performing a non-affine transform on a function including a variable to produce a transformed path. In particular, Browne fails to show this step because it only shows performing transforms on control points for curves. These control points are fixed values that define the curve. By transforming only the fixed control points, Browne does not perform a transform on a function including a variable.

Since neither Sayre nor Browne show a step of performing a non-affine transform on a function including a

variable, the combination of these references does not show or suggest the invention of claim 1 or claims 3-9 which depend therefrom.

Dependent Claim 4

Claim 4 includes a further limitation wherein the function is of order n and the transformed function is of order 2n.

The Office Action rejected claim 4 by stating that, "Sayre discloses a portion of the base image as a path comprises describing the portion using a function of order n and 2n (col. 1, lines 46-62)." Applicants respectfully dispute this assertion.

The cited section discusses possible transforms that can be applied to a pixel. However, the cited section does not show or suggest that applying a non-affine transform to a path of order n would result in a transformed function of order 2n. As such, the combination of Sayre and Browne does not show or suggest the invention of claim 4 in which a transform applied to a function of order n produces a transformed function of order 2n.

Claim 7

Claim 7 depends from claim 1 and includes a further limitation wherein the transform is a perspective transform.

In the Office Action, column 1, lines 46-62 of Sayre was cited as showing a perspective transform. The cited section discusses warping functions and states that such functions can be "wholly arbitrary function." However, it does not specifically describe a perspective transform. Further, there is no suggestion in either Sayre or Browne to apply a perspective transform to a path representing multiple pixels of an image. As such, the application of a perspective transform to a path as found in claim 7 is patentable over the combination of Sayre and Browne.

Claim 8

Claim 8 depends from claim 7 and includes a further limitation wherein the transform produces a rational function of order n. The Office Action rejected claim 8 by stating that, "Sayre discloses a portion of a base image as a path comprises describing a portion using a function of order n and 2n (col. 1, lines 46-62)."

This statement has no connection to claim 8 and does not address the limitation of claim 8 wherein the non-affine perspective transform produces a rational function of order n. Further, the cited section of Sayre makes no mention of forming a rational function of order n by applying a perspective transform to a path.

Since neither Sayre nor Browne suggest producing a rational function of order n by applying a perspective transform to a path, their combination does not show or suggest the invention of claim 8.

Claims 21-22 and 24-26

Independent claim 21 recites a computer readable medium having computer executable components for performing steps comprising generating a function of a variable to describe multiple pixels of an image for a computer screen. The function is transformed using a non-affine transform applied to the entire function including the variable to produce a transform function. The transform function is converted into an image on the computer screen.

Neither Sayre nor Browne show or suggest a technique for transforming a function including a variable using a non-affine transform instead of transforming individual pixels. Under Sayre and Browne, individual points are transformed instead of transforming functions that include variables.

Note that transforming a function using a non-affine transform was not obvious from the prior art since non-affine transforms are much more complex than affine transforms, and the art had not been able to find a way to perform non-affine transforms on functions. Instead, as shown by Sayre and Browne, the prior art was forced to perform transforms of discrete points. Since neither Sayre nor Browne show or suggest applying non-affine transforms to a function, including the variables of the functions, their combination does not show or suggest the invention of claim 21 or claims 22 and 24-26 which depend therefrom.

Dependent Claim 24

Claim 24 includes a further limitation wherein transforming a function comprises transforming a function of order n to form a function of order 2n.

The Office Action rejected claim 24 by stating that, "Sayre discloses the portion of the base image as a path comprises describing the portion using a function of order n and 2n (col. 1, lines 46-62)." Applicants respectfully dispute this assertion.

The cited section discusses possible transforms that can be applied to a pixel. However, it does not show or suggest applying a non-affine transform to a function and in particular does not show or suggest applying a non-affine transform to a function of order n to produce a transform function of order 2n.

Similarly, Browne does not show applying a transform to a function of order n to form a transform function of order 2n.

As such, the combination of Sayre and Browne does not show or suggest the invention of claim 24.

Claim 25

Claim 25 depends from claim 21 and includes a further limitation wherein transforming a function comprises using a perspective transform.

In the Office Action, column 1, lines 46-62 of Sayre was cited as showing a perspective transform. The cited section discusses warping functions and states that such functions can be "wholly arbitrary function." However, it does not specifically describe a perspective transform. In addition, there is no suggestion in either Sayre or Browne for applying a perspective transform to a function as found in claim 25. As such, the application of a perspective transform to a function as found in claim 25 is patentable over the combination of Sayre and Browne.

Conclusions

From the remarks above, it is clear that the invention of claims 1-38 is not shown or suggested in the combination of Sayre and Browne. As such, claims 1-38 are in form for allowance. Reconsideration and allowance of the claims is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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